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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/771,406	02/05/2004	Ren-Yang Horng	HORN3174/EM	3818
23364	7590	11/22/2005	EXAMINER	
BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314			BARRY, CHESTER T	
			ART UNIT	PAPER NUMBER
			1724	

DATE MAILED: 11/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/771,406

Applicant(s)

HORNG ET AL.

Examiner

Chester T. Barry

Art Unit

1724

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 17 is/are rejected.
- 7) ☒ Claim(s) 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☒ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

Art Unit: 1724

Claims 1 – 3, 7, 8, 9 are rejected under 35 USC Sec. 102(e) as anticipated by US application US 20030178364 A1 to Yum or USP 6517723 to Daigger. Yum describes a first vessel 11, 12 capable of receiving a pH-adjusting material, a second vessel 12 or 13, respectively, each also capable of receiving a pH-adjusting material, and a permeate-drawing vacuum pump-assisted membrane bio-reactor/filter 22. Daigger also shows two upstream vessels into which pH adjusting materials are capable of being placed.

Accordingly, YUM and Daigger describe an apparatus having a reactor capable of carrying out a hydrolysis reaction, a reactor capable of carrying out a neutralization reaction, and a membrane bioreactor filter capable of filtering microbes from an intermediate feed material, i.e., bioreactor 22. Per claims 2-3, an aeration gas is shown.

Claims 10 – 12, 14, 15 are rejected under 35 USC Sec. 103(a) as obvious over DAIGGER. It would have been obvious to have provided Daigger's reaction vessel with means for controlling the pH because pH is known to be a process parameter to which waste degrading microbes are known to be sensitive. Per claim 15, it would have been obvious to have controlled the pH to around 7 to benefit moist microbes. Per claim 10, note Daigger's disclosure of an agitator. Per claim 12, it would have been obvious to have provided temperature control, e.g., a controlled heater.

Claims 12 – 13, 17 are rejected under 35 USC Sec. 103(a) as obvious over DAIGGER in view of Tonnelli. USP 5558774 A to Tonnelli describes using a membrane filter to separate filtrate from an ATA bioreaction vessel operated at the thermophilic range, 45 – 75 degree. C. It would have been obvious to have operated a heater in the Daigger device in the thermophilic temperature range in view of Tonelli's suggestion to do so in a membrane biofilter-equipped reaction system.

Claim 4 is rejected under 35 USC Sec. 103(a) as obvious over YUM or DAIGGER as applied to claim 3, further in view of JP 64-75095 to ONISHI.

ONISHI shows that it is conventional to provide membrane filter with backwash capabilities. It would have been obvious to have provided means to backwash the membrane filter in order to clean it, as suggested by JP 64-75095 to ONISHI.

Claim 5 is rejected under 35 USC Sec. 103(a) as obvious over YUM or DAIGGER as applied to claim 1 above, further in view of US 20040178144 A1 to Goldsmith. Goldsmith describes both tubular and cassette type membrane bioreactors.<sup>1</sup> See also Fig. 1 for disclosure of cassette configurations.

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<sup>1</sup> Goldsmith [0014] reads: There has been little work using ceramic membranes in a submerged MBR configuration. A recent presentation by Xu, Xing, and Xu entitled "Design and Application of Airlift Membrane-Bioreactor for Municipal Wastewater

Art Unit: 1724

Objection is made to claim 16, but would be allowed if presented in independent form.

571-272-1152

A handwritten signature in black ink, appearing to read 'Chestert T. Barry', with a stylized flourish at the end.

**CHESTERT T. BARRY**  
**PRIMARY EXAMINER**

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Reclamation" describes the use of an airlift MBR using single tubular ceramic UF membrane elements and a five (5) channel multichannel UF membrane element (Presentation at the North American Membrane Society Meeting, May 11-15, 2002, Long Beach, Calif.).